

Amendments To The Claims

The following listing of claims will replace all prior versions and listings of claims in the application. Please cancel Claims 31-34.

Listing Of Claims

1. (previously presented) A microfastening system comprising:
a first fastening element including a plurality of extending nanotubes; and
a second fastening element including a plurality of extending nanotubes;
wherein the extending nanotubes from each element are disposed so as to become
mechanically interconnected as the first and second fastening elements are joined by advancing
toward each other.

2. (canceled)

3. (canceled)

4. (canceled)

5. (canceled)

6. (canceled)

7. (canceled)

8. (canceled)

9. (canceled)

10. (canceled)

RECEIVED
AUG 22 2003
GROUP 3600

11. (canceled)

12. canceled

13. (canceled)

14. (canceled)

15. (canceled)

16. (canceled)

17. (canceled)

18. (canceled)

19. (canceled)

20. (canceled)

21. (canceled)

22. (canceled)

23. (canceled).

24. (previously presented) A microfastening system comprising:
a first fastening element including a plurality of extending nanotubes; and
a second fastening element including a plurality of extending nanotubes, wherein said nanotubes of
at least one of said fastening elements are selectively deformable;

whereby upon joining said first and second fastening elements, the extending nanotubes from each element become mechanically interconnected, wherein said fastening elements are reusable.

25. (previously presented) The microfastening system of Claim 24 wherein said at least one of first and second fastening elements further comprise a substrate from which said nanotubes extend.

26. (previously presented) The microfastening system of Claim 25 wherein said substrate is formed from materials selected from the group consisting of metals, carbon, silicon, germanium, polymers and composites thereof.

27. (previously presented) The microfastening system of Claim 24 wherein said nanotubes are at least partially multi-walled.

28. (previously presented) The microfastening system of Claim 24 wherein the nanotubes are functionalized to a non-linear shape.

29. (previously presented) The microfastening system of Claim 28 wherein the non-linear nanotubes of said fastening element are selected from hooks, loops, spirals and combinations thereof.

30. (canceled)

31. (canceled)

32. (canceled)

33. (canceled)

34. (canceled)

35. (previously presented) A method of manufacturing a microfastener comprising the steps of:

- a) providing a substrate having an attachment surface;
- b) introducing a plurality of open ended selectively deformable non-linear nanotubes to said substrate whereby said nanotubes are attracted to said attachment surface and become affixed thereto, wherein said microfastener is reusable.

36. (previously presented) The method of Claim 35 wherein said nanotubes are functionalized prior to attaching to said substrate.

37. (canceled)

38. (canceled)

39. (previously presented) The method of Claim 35 wherein said substrate is formed from materials selected from the group consisting of metals, carbon, silicon, germanium, polymers and composites thereof.

40. (previously presented) The method of Claim 35 wherein said nanotubes are at least partially multi-walled.

41. (previously presented) The method of Claim 35 wherein the non-linear nanotubes of said microfastener are selected from hooks, loops, spirals and combinations thereof.

42. (previously presented) The method of Claim 35 wherein said nanotubes are attached to said substrate in the presence of an electric field.

43. (canceled)

44. (previously presented) A microfastening system comprising:

a first fastening element including a plurality of extending nanotubes; and

a second fastening element including a plurality of extending nanotubes, at least some of which comprise nanotubes selected from the group consisting of

- a) hooks, and
- b) spirals,

whereby upon joining said first and second fastening elements, the extending nanotubes from each element become mechanically interconnected.


45. (previously presented) The microfastening system of Claim 44 wherein said at least one of first and second fastening elements further comprise a substrate from which said nanotubes extend.

46. (previously presented) The microfastening system of Claim 45 wherein said substrate is formed from materials selected from the group consisting of metals, carbon, silicon, germanium, polymers and composites thereof.

47. (previously presented) The microfastening system of Claim 44 wherein said nanotubes are at least partially multi-walled.

48. (previously presented) The microfastening system of Claim 44 wherein the nanotubes are functionalized to a non-linear shape.

49. (previously presented) The microfastening system of Claim 48 wherein the non-linear nanotubes of said first fastening element are selected from hooks, loops, spirals and combinations thereof.

 50. (previously presented) The microfastening system of Claim 44 wherein said nanotubes of at least one of said fastening elements are selectively deformable.

51. (previously presented) The microfastening system of Claim 44 wherein said fastening elements are reusable.

52. (canceled)

53. (canceled)

54. (canceled)

55. (canceled)

56. (canceled)

57. (previously presented) A method of manufacturing a microfastener having nanotubes with two ends, comprising the steps of:

a) providing a substrate having an attachment surface;

b) introducing a plurality of open ended nanotubes to said substrate whereby said nanotubes are attracted to said attachment surface and become affixed thereto, wherein at least some of the nanotubes become affixed at only one end, wherein said microfastener is reusable.

58. (previously presented) The method of Claim 57 wherein said nanotubes are functionalized prior to attaching to said substrate.

59. (canceled)

60. (canceled)

61. (previously presented) The method of Claim 57 wherein said substrate is formed from materials selected from the group consisting of metals, carbon, silicon, germanium, polymers and composites thereof.

62. (previously presented) The method of Claim 57 wherein said nanotubes are at least partially multi-walled.

63. (previously presented) The method of Claim 57 wherein the non-linear nanotubes of said fastening element are selected from the group consisting of loops, hooks, spirals, and combinations thereof.

64. (previously presented) The method of Claim 57 wherein at least some of said nanotubes are selectively deformable.

65. (previously presented) The method of Claim 57 wherein said nanotubes are attached to said substrate in the presence of an electric field.

66. (canceled)

67. (previously presented) A microfastening system according to claim 1, wherein the fastening elements comprise a substrate including an attachment surface and a plurality of functionalized non-linear nanotubes attached to and extending from said attachment surface, wherein the nanotubes have a free standing end which is free of the surface.

68. (previously presented) A microfastening system comprising:
a first fastening element including a plurality of extending nanotubes; and
a second fastening element including a plurality of extending nanotubes;
wherein the extended nanotubes of the fastening elements are functionalized so as to obtain mating fastening elements, wherein the nanotubes are disposed so as to become mechanically interconnected as the elements are advanced toward one another.

69. (previously presented) A microfastening system according to claim 68, wherein at least one of the first and second fastening elements further comprise a substrate from which said nanotubes extend.

70. (previously presented) A microfastening system according to claim 69, wherein said substrate is formed from materials selected from the group consisting of metal, carbon, silicon, germanium, polymers, and composites thereof.

71. (previously presented) A microfastening system according to claim 68, wherein the nanotubes are at least partially multi-walled.

72. (previously presented) A microfastening system according to claim 68, wherein the nanotubes are functionalized to a non-linear shape.

73. (previously presented) A microfastening system according to claim 72, wherein the non-linear nanotubes are selected from the group consisting of hooks, loops, spirals, and combinations thereof.

74. (previously presented) A microfastening system comprising a plurality of mating nanoscale fastening elements, wherein the fastening elements comprise carbon nanotubes structurally modified to include bent portions, wherein the nanotubes are so disposed that the fastening elements become mechanically interconnected as the elements are advanced toward one another.


75. (previously presented) A microfastening system according to claim 73, wherein the fastening elements comprise a substrate including an attachment surface and a plurality of functionalized non-linear nanotubes attached to and extending from said attachment surface, wherein the nanotubes have a free standing end which is free of the surface.

76. (previously presented) A microfastening system according to claim 74, wherein at least one of the first and second fastening elements further comprise a substrate from which the nanotubes extend.

77. (previously presented) A microfastening system according to claim 76, wherein the substrate is formed from materials selected from the group consisting of metals, carbon, silicon, germanium, polymers, and composites thereof.

78. (previously presented) A microfastening system according to claim 74, wherein the nanotubes are at least partially multi-walled.

79. (previously presented) A microfastening system according to claim 74, wherein the nanotubes are functionalized to a non-linear shape.



80. (previously presented) A microfastening system according to claim 79, wherein the non-linear nanotubes are selected from the group consisting of hooks, loops, spirals, and combinations thereof
